

MICROBURSTS OF TeV GAMMA RAYS FROM THE CRAB PULSAR

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Data on Crab pulsar from atmospheric Cerenkov array at Ooty have shown emission of TeV gamma rays in the form of microbursts. These are series of events which are unusually closely spaced in time with time separations of less than 1.5 milliseconds. The phasogram of events in the bursts when analysed with Crab pulsar period shows significant peaks. These peaks have been seen in the data of 1979-80, 80-81, and 82-83. The 82-83 data further show that the signal is at the same absolute phase as the radio peak. Monte Carlo calculations show that the probability of peaks being due to chance is very small. In 84-85, the array was split and operated at two sites separated from each other by 11 Km. As described in our paper OG 3.4-10¹, one array was entirely with smaller mirrors and the other was entirely with larger mirrors and thus the two arrays had different thresholds. Furthermore, half of the array with larger mirrors was made to track a direction $\sim 8^\circ$ S from that of Crab. The mean trigger rate of the small mirror array was about 125/minute and that of the large mirror array was about 280/minute. The amount of data where there is overlap in the observation between the two sites is about 20 hours. The pulsar elements (contemporaneous with our experiment) derived from radio observation were supplied to us by Dr. A. G. Lyne (Jordell Bank, U.K.). These elements were used by us to obtain the pulsar phasograms from our data. Apart from results on bursts, we will also present time averaged phasograms for the Crab pulsar from the two arrays.

References

1. P. N. Bhat et al. (1985) see OG 2.3-10 in this volume.